

Remarks: Examination Report

1. Section 1 of the Examination Report

Applicant elected claims 1-13, 16, and 17 without traverse.

2. Section 2 of the Examination Report

The objection to the drawings is noted.

- a. The elements in the figures 1, 5A-5F, 9A-9E, 10A-10E, 11, 12A, 12B, and 13 were labeled, as required by the Examiner.
- b. The symbols θ_i and d were included in figures 4A and 4B, as required by the examiner.
- c. Arrows were added to connections in Figure 10A (as well as figures 10B-10E) to better illustrate the signal flow described in the specification. With regard to Figure 10A, the modulator 94 modulates an information signal $s_n(t)$ from an information-signal source 90 onto a wideband signal generated by a wideband-signal source 92 for providing a spread-spectrum signal (page 18, lines 15-18). A wideband signal from the wideband-signal source 92 is delayed by at least one delay element, such as delay element 96, before being coupled into the transmitter 99 (page 18, lines 19-21). This amendment should make it clear that there is no connection between the output of 94 and the input of 96. Also, the delay element's reference number was changed from 96 to 96.1 in the figure in order to conform with a correction to the specification required by the Examiner.
- d. The Examiner noted that in Figure 14C, the word “into” should be changed to “onto” for clarity. However, Applicant respectfully disagrees with the Examiner on this point. In wireless communications, it is customary to refer to transmitting a signal into a communication channel rather than onto a communication channel. The phrase “into a channel” appears to be more popular than the Examiner’s suggestion of “onto a channel.” For example, the former phrase appears 32,300 times in a Google search, whereas the latter phrase appears only 578 times.

3. Section 3 of the Examination Report

The specification was amended such that the reference number 96, which is referred to as a delay element in Figure 10A, was changed to 96.1 in order to comply with the Examiner's recommendation.

4. Section 4 of the Examination Report

Claims 7, 8, 13, 16, and 17 were objected to because of specified informalities.

Claims 7 and 13: The Examiner noted that the word “into” should be changed to “onto” for clarity. However, Applicant respectfully disagrees with the Examiner on this point. In wireless communications, it is customary to refer to transmitting a signal into a communication channel rather than onto a communication channel. The phrase “into a channel” appears to be more popular than the Examiner’s suggestion of “onto a channel.” For example, the former phrase appears 32,300 times in a Google search, whereas the latter phrase appears only 578 times.

Claim 8: The Examiner states that the phrase “the wideband signal” should be “the information-bearing wideband signal.” However, in Applicant’s record of the claims, Claim 8 reads as follows:

8. A method of producing diversity-encoded spread-spectrum signals comprising: generating at least one information-bearing wideband signal, generating at least one decoding signal, and diversity-encoding at least one of the information-bearing wideband signal and the decoding signal.

Furthermore, this claim also appears in this form in the published application no. **20010046255** corresponding to this application.

Claims 16 and 17: The Examiner recommended changing “for generating” to “to generate” for clarification. Applicant respectfully suggests in the amended claims the

phrase “configured for generating” in order to be consistent with grammar used elsewhere in the claims 16 and 17.

5. Sections 4-7 of the Examination Report

Claims 8-13 were rejected under 35 U.S.C. 112. In particular, The Examiner noted that in Claim 8, the step of generating at least one decoding signal appears to be inconsistent with a method for producing diversity-encoded spread-spectrum signals. Usually, the decoding signal is generated in the receiver, whereas a transmitter would implement a method for producing diversity-encoded spread-spectrum signals. Furthermore, claim 12 recites modulating the decoding signal onto a carrier signal, whereas the decoding signal is usually in a receiver.

The Examiner points out in Paragraph 7 that the decoding signal is usually generated in the receiver rather than the transmitter. Therefore, the Examiner should appreciate the novelty of the claimed invention in which a decoding signal (i.e., a despread signal, such as described with respect to Fig. 10A and on Page 17, lines 23-26) is generated at the transmitter and transmitted along with an information-modulated signal so a receiver does not have to generate the decoding signal (e.g., Page 5, lines 1-3). Rather, diversity at the transmitter is employed in such a way that the decoding signal and the information-modulated signal may be separable from each other at the receiver (e.g., via channelization, interference cancellation, multi-user detection, etc.) and then combined to demodulate or despread the information-modulated signal. Thus, the type of combining at the receiver is not necessarily diversity combining (although it could include diversity combining). Rather, the decode signal and information-modulated signal are combined (e.g., correlated) to “decode, decrypt, or otherwise extract an information signal from a received signal” (Page 17, lines 23-26).

Another benefit of transmitting the decoding signal along with the coded information is that both signals may undergo substantially identical channel distortions. Thus, the claimed invention may employ a much simpler technique for matching the decoding signal to the distortions experienced by the coded information.

6. Section 8 of the Examination Report

Claim 10 was rejected under 35 U.S.C. 112. This rejection is moot in view of Claim 10 having been cancelled in this amendment.

7. Sections 9-19 of the Examination Report

Claims 1-4, 6-11, and 13 were rejected under 35 U.S.C. 102(b) as being anticipated by Cafarella (U.S. Pat. No. 5,809,060).

Claims 1, 5, 8, and 11 were rejected under 35 U.S.C. 102(b) as being anticipated by Weerackody (U.S. Pat. No. 5,289,499).

Cafarella (5,809,060) shows a receiver that provides a cross-correlation of a locally generated reference code 49 with the received signal 47 (FIG. 4, col. 13, lines 29-34, FIG. 9, and col. 19 lines 1-3). However, Cafarella does not show a transmitter that generates a decoding signal (i.e., a reference code) for transmission along with a coded signal.

The Examiner states that Weerackody (5,289,499) discloses generating a decoding signal 63 in FIG. 5. While this is true, the signal generator 63 is shown as part of a Rake receiver, rather than in a transmitter. Thus, like other well-known prior-art systems, the decoding signal is generated locally by the receiver. Weerackody does not show generating a decoding signal at the transmitter.

Therefore, Applicant submits that in a method of producing diversity-encoded spread-spectrum signals for transmission into a wireless communication channel, the step of generating a despreading signal in addition to a spread information signal, such as recited in the independent claim 1, clearly recites a novel feature that is neither described nor anticipated by the prior art.

Furthermore, evidence for such novelty is clearly stated by the Examiner in Paragraph 7 of the Examination Report: “Usually, the decoding signal is generated in the receiver.”

Since the amended independent claim 1 clearly presents novel structure that the prior-art references neither describe nor anticipate, the amended independent claim 1, (and hence, the dependent claims 2-3 and 5-7) should be considered patentable under 35 U.S.C. 102.

Similarly, the amended independent claim 8 a method of producing diversity-encoded spread-spectrum signals for transmission into a wireless communication channel that includes generating at least one decoding signal in addition to at least one information-bearing wideband signal.

Since the amended independent claim 8 clearly presents novel structure that the prior-art references neither describe nor anticipate, the amended independent claim 8, (and hence, the dependent claims 9 and 11-13) should be considered patentable under 35 U.S.C. 102.

8. Sections 20-21 of the Examination Report

Claims 16 and 17 were rejected under 35 U.S.C. 103(a) as being unpatentable over Weerackody in view of Dybdal (U.S. Pat. No. 5,781,845).

Weerackody shows a signal generator 63 as part of a Rake receiver, rather than a transmitter. Thus, like other well-known prior-art systems, the decoding signal is generated locally by the receiver. Weerackody does not show generating a decoding signal at the transmitter.

Dybdal (5,781,845) shows a transmitter comprising an antenna array with adaptive weighting circuitry. Dybdal does not show generating a decoding signal at the transmitter.

Therefore, the combination of Weerackody and Dybdal is incapable of making a spread-spectrum transmitter that is configured to generate a despreading signal along with a

spread-spectrum signal, such as recited in the amended independent claims 16 and 17. Neither Weerackody nor Dybdal mention the desirability of transmitting a despreading signal along with a spread-spectrum signal. Therefore, the combination of Weerackody and Dybdal provides no suggestion or reason for producing the claimed invention.

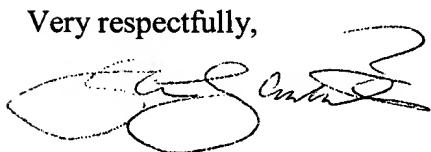
Furthermore, a proclamation of the non-obviousness of the claimed invention is clearly stated by the Examiner in Paragraph 7 of the Examination Report: "Usually, the decoding signal is generated in the receiver."

Since the amended independent claims 16 and 17 clearly present novel structure that the prior-art references, in combination, neither describe nor anticipate, the amended independent claims 16 and 17 should be considered patentable under 35 U.S.C. 103.

9. Conclusion

The Applicant submits that every effort has been made to address the Examiner's objection and that the Application is now in condition to proceed to grant.

Very respectfully,



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